

## REMARKS

### *Status of the Claims*

Claims 2 – 4, 7 – 11, 16 – 18, and 24 – 30 are pending, with claim 24 being independent. Without conceding the propriety of the rejections, claim 24 has been amended merely to expedite prosecution and to even more clearly recite and distinctly claim Applicant's invention. Support for the amendment can be found throughout the specification. Therefore, no new matter has been added.

Applicant respectfully requests the Examiner to reconsider and withdraw the outstanding rejections in view of the foregoing amendment and the following remarks.

### *Claim Rejections under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a)*

Claims 24 – 30 are rejected under 35 U.S.C. § 102(b) as being anticipated by EP 0 583 836 (Eilers) and claims 2 – 4, 7 – 11, and 16 – 18 are rejected under 35 U.S.C. § 103 (a) as being obvious over EP 0 583 836 (Eilers). Applicants respectfully disagree with these rejections; therefore, these rejections are traversed.

Eilers relates to a process for the preparation of hydrocarbon fuels employing *two hydroconversion stages*. (page 4, lines 33-34). Eilers teaches that in the first hydroconversion stage, the hydrocarbon product is contacted with hydrogen in the presence of a hydrogenation catalyst, wherein the first hydroconversion is operated such that substantially no isomerization or hydrocracking of the feed occurs. Eilers teaches that the first hydroconversion stage is operated to achieve the desired degree of hydrogenation without substantial hydrocracking or hydroisomerization. Eilers teaches that in this first hydroconversion stage, the hydrocarbon product is contacted with hydrogen in the presence of a hydrogenation catalyst at elevated temperature and pressure. Eilers specifies that the operating temperature may range from 100 to 300°C and the operating pressure ranges from 5 to 150 bars. (page 4, line 40 – page 5, line 22). Eilers further teaches that at least part of the hydrocarbon product of the first hydroconversion stage is then contacted with hydrogen in the presence of a hydroconversion catalyst under conditions such that hydrocracking and isomerization of the hydrocarbon feed occurs to yield a substantially paraffinic hydrocarbon fuel.

In contrast, the presently claimed invention relates to a process for minimizing formation of heavy molecular weight products from reactive oxygenate and hydrocarbon

unsaturates in a hydroconversion feed stream during heating *prior to* the hydroconversion process. The presently claimed process involves adding a hydrogen containing gas stream to the hydroconversion feed stream *prior to any heating* of the stream and thus *prior to* subjecting the stream to *hydroconversion conditions*. In the presently claimed process, a *first hydrogen-containing gas* is added to the hydrocarbon stream *not under hydroconversion conditions*, wherein the first hydrogen-containing gas is sufficient to reduce the amount of heavy molecular weight products formed during heating as compared to a heated hydrocarbon stream without added hydrogen, to form a mixed stream. Accordingly, the addition of the first hydrogen-containing gas to the hydrocarbon stream is *not* performed under hydroconversion conditions, and thus, is *not* a hydroconversion stage. The first hydrogen-containing gas is added to reduce the amount of heavy molecular weight products formed during heating, which protects the pre-heat equipment in the hydroconversion process. The pre-heat equipment includes shell and tube heat exchangers, furnaces, and other equipment.

In the presently claimed process, the mixed stream is then heated. To the heated mixed stream is added a *second hydrogen-containing gas* sufficient to effect *hydroconversion* of the mixed stream, to form a hydroconversion feed stream. The hydroconversion feed stream is then heated to reaction temperature, and the hydroconversion feed stream is hydroconverted. Accordingly, in the presently claimed invention, a hydroconversion reaction is not conducted until the second hydrogen-containing gas is added to the heated mixed stream forming a hydroconversion feed stream and the hydroconversion feed stream is heated to reaction temperature for the hydroconversion.

Applicants respectfully submit that upon reading the claimed steps in order, it is evident that the first addition of hydrogen in the claimed process is not performed under hydroconversion conditions, and thus, is not a hydroconversion stage. In the presently claimed process, steps (a) through (d) are performed before hydroconverting the hydroconversion feed stream in step (e).

In contrast to the presently claimed invention, in Eilers the first addition of hydrogen is a hydroconversion step. Eilers teaches contacting the hydrocarbon product with hydrogen in the presence of a hydrogenation catalyst under reaction conditions for hydrogenation in a first hydroconversion step. Eilers further teaches that at least a part of the product of this first hydroconversion step is then contacted with hydrogen in the presence of a hydroconversion

catalyst under reaction conditions for hydrocracking and isomerization in a second hydroconversion step.

Accordingly, the process of Eilers is a two-stage hydroconversion process that is significantly different than the presently claimed invention. It is respectfully submitted that in no way does Eilers teach or suggest adding a first hydrogen-containing gas to a hydrocarbon stream to reduce the amount of heavy molecular weight products formed during heating as compared to a heated hydrocarbon stream without added hydrogen, to form a mixed stream. As Eilers does not teach each and every element of the claims, it cannot anticipate the presently claimed invention. In addition, since the two-stage hydroconversion process of Eilers does not suggest adding a first hydrogen-containing gas to a hydrocarbon stream to reduce the amount of heavy molecular weight products formed during heating, it cannot render the presently claimed invention obvious.

Accordingly, withdrawal of the rejections under 35 U.S.C. § 102(b) and § 103(a) are respectfully requested.

### ***Conclusion***

Without conceding the propriety of the rejections, the claims have been amended, as provided above, merely to expedite prosecution. For the reasons noted above, the art of record does not disclose or suggest the inventive concept of the present invention as defined by the claims. In view of the foregoing amendments and remarks, reconsideration of the claims and allowance of the subject application is earnestly solicited.

The Examiner is invited to contact the undersigned at the below-listed telephone number, if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted,

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